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IS 1448-62 (1974): Methods of test for petroleum and its products, Part 62: Heat stability of greases [PCD 1: Methods of Measurement and Test for Petroleum, Petroleum Products and Lubricants]

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IS : 1448 [P : 62] - 1974
Adopted : 18 *November* 1974

Indian Standard (Reaffirmed 2003)

METHODS OF TEST FOR PETROLEUM AND ITS PRODUCTS: HEAT STABILITY OF GREASES

[P : 62]

(First Revision)

Third Reprint NOVEMBER 1993

UDC 621·892 : 543·876

1. SCOPE

1.1 The methods prescribed are intended to determine the heat stability of lime base, soda base and soda and lime mixed base greases. Method A is suitable for lime base greases whereas Method B is suitable for soda base and soda and lime mixed base greases.

2. OUTLINE OF THE METHOD

2.1 In Method A, 10 g of the sample in a watch-glass is placed in an oven, maintained at 120 ± 1°C or at any other specified temperature for at least one hour. After keeping it for 24 hours at room temperature, the sample is examined for signs of breakdown, change in consistency and separation of oil. In Method B, 30 g of the sample in a dish is placed in an oven maintained at 150 ± 1°C for 3 hours. After keeping for 24 hours the dish containing the grease is kept in an inverted position for 24 hours. The difference in mass before and after inverting the dish is calculated as the percentage loss in mass of the sample initially taken for the test.

3. METHOD A

3.1 Procedure for Superior Quality Lime Base Greases — Weigh accurately about 10 g of the sample and make it into a disc of approximately 35 mm diameter and 5 mm height in the centre of a watch-glass of

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January 1975

90 to 100 mm diameter and 7 to 10 mm depth at centre. Place the watch-glass on a removable metal shelf in an air-oven maintained at 120 ± 1°C. To allow free air circulation, do not cover the metal shelf with asbestos sheet or any other thing. Maintain the oven at 120 ± 1°C for at least half an hour before introducing the sample. When several tests are being carried out simultaneously, keep the watch-glasses in the oven in such a way that they do not cover more than 40 percent of surface area of the removable shelf on which the sample is kept. Keep them in the oven for one hour from the time the oven temperature automatically rises to 120°C after the initial temperature drop during introduction of the watch-glasses (normally the time taken for the oven to attain 120°C temperature is about half an hour). Remove the watch-glasses, allow them to stand for 24 hours at room temperature in a draught-free place and examine the sample for signs of breakdown, marked change in consistency or separation of the oil by the following procedures:

a) Keeping the watch-glass in a slanting position (10 to 20° from the vertical) and watching for flow of oil, thinned grease, if any; and

b) Cutting the sample with a glass rod.

3.2 Procedure for Lime Base Greases — Proceed as under **3.1** with the modification that the oven shall be maintained at 95 ± 1°C for the test.

3.3 Precision — The precision of the method has not been established.

4. METHOD B

4.1 Apparatus — a dish made of metal (nickel or steel), 75 mm in diameter and 19 mm in depth, fitted with a closely-fitting lid in which a hole of 70 mm diameter has been cut, and a perforated zinc sheet of approximately 12 holes to a square centimetre soldered over the cut-out portion of the lid.

4.2 Procedure — Place approximately 50 g of the sample in the tared metal dish and weigh with the lid. Place the dish without the lid in an oven at 150 ± 1°C. After heating for 3 hours at this temperature, take out the dish and allow it to stand undisturbed for 24 hours at room temperature. Place the lid on the dish and reweigh (mass A). Invert the dish along with lid, on a pad of filter paper and allow it to remain for 24 hours. Wipe out any oil adhering to the exterior of the lid and dish and weigh (mass B).

4.3 Calculation — Calculate the difference in mass A and mass B and express as percentage loss in mass of the material initially taken for the test.

4.4 Precision — The precision of the method has not been established.